

Appl. No. 10/521,835
Amdt. Dated July 14, 2006
Reply to Office Action of March 20, 2006

Amendments to the Drawings:

The attached sheet of drawings includes changes to Figures 3 and 4. In Figures 3 and 4, the correct cross-hatching for the disclosed invention has been added.

Attachment: Replacement Sheet.

REMARKS

Applicant acknowledges receipt of the Office Action dated March 20, 2006.

In the specification, the title has been changed as per the Examiner's suggestion in order to clearly describe the invention to which the claims are directed.

In amended Figures 3 and 4, cross-hatching has been altered to accurately indicate the materials of the described invention.

Claim 6 has been canceled. By this Response, claim 3 has been amended and new claims 7-9 have been presented. Claims 1-5 and 7-9 are pending in the application.

Applicant believes the pending claims are allowable over the art of record for the reasons set out below and therefore respectfully requests reconsideration and allowance of all pending claims.

Rejections Under 35 U.S.C. §102(b):

In the Office Action of March 20, 2006, claims 1 and 5 are rejected under 35 U.S.C. §102(b) as being anticipated by Johnson et al. (U.S. Patent No. 4,117,312, *Johnson*).

According to 35 U.S.C. §102:

A person shall be entitled to a patent unless-

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

The Examiner argues in section 7 of the March 20, 2006 Office Action that claim 1 is anticipated by *Johnson*. However, claim 1 of the present application requires that "at least one of the conductors is encased in a sheath of material which has a positive temperature coefficient." The Examiner states that *Johnson* discloses all of the features of Claim 1, referring to layer 36 of *Johnson*, which is coated on at least one of the conductors 10, 12 as a "sheath of material"

coinciding to that disclosed in claim 1 of the present invention. We respectfully disagree with the Examiner's view of *Johnson*, and submit that *Johnson* does not disclose a sheath, but simply a layer of material as explicitly stated in the description of *Johnson*, and shown in Figure 4 of *Johnson*, which depicts a layer of material on one side of a conductor. In the present application, it is apparent from the description and the figures made reference to in the description, that the term *sheath* as utilized refers to an entity that surrounds/envelops another structure, in this case, a conductor. The use of the term sheath in the present claims is consistent with dictionary definitions. For example, Merriam-Webster defines a sheath as "any of various covering or supporting structures that are applied like or resemble in appearance, or function, the sheath of a blade."

Furthermore, it should be noted that the use of the sheath of positive temperature coefficient to encase a conductor, as present claimed, is particularly advantageous and superior to a layer of material. A conductor may be more easily covered with a sheath than with a layer of material. A sheath could, for example, be extruded over the conductor. A sheath of material may cover the conductor more evenly, and yield a more uniform thickness along the length of the conductor. This improved coverage allows excellent electrical contact between the sheath and the conductor at all points along its length, and ensures that the resistivity of the sheath is also uniform along its length. In addition, since the sheath encases the conductor, it is difficult to detach the sheath from the conductor, for example, by bending or general use of the heating cable.

In contrast, *Johnson* requires that a layer be deposited on the conductor. It is difficult to ensure that a layer is of uniform thickness along the length of the conductor, and it is also difficult to ensure that a layer evenly covers the conductor. Also, a layer of material may be more easily detached from the conductor than a sheath, since a layer does not mandatorily encase the conductor, and can become detached when the heating cable is flexed. It is clear that the present invention incorporating a sheath of material is particularly advantageous over *Johnson*, which discloses only a layer 36 of material.

In view of the above, Applicant respectfully traverses and submits that, as *Johnson* fails to disclose the sheath of material disclosed in claim 1 of the present invention, *Johnson* does not

meet the anticipatory requirements of 35 U.S.C. §102(b). Thus, it is requested that the §102(b) rejections to claim 1 and also to claim 5, which depends therefrom, be removed.

Rejections Under 35 U.S.C. §103(a):

In section 10 of the March 20, 2006, Office Action, claim 2 is rejected as being unpatentable over Johnson et al. (U.S. Patent No. 4,117,312, *Johnson*). In section 11 of the Office Action, claims 1-5 are also rejected under 35 U.S.C. §103(a) as being unpatentable over Heizer (U.S. Patent No. 6,144,018, *Heizer*) in view of Johnson et al. (U.S. Patent No. 4,117,312, *Johnson*).

According to 35 U.S.C. §103:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

All Claim Limitations Are Not Taught by the Prior Art

The MPEP §2143.03 provides that in order to establish a *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). “All words in a claim must be considered in judging the patentability of that claim against the prior art.” *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Applicant submits that the use of a sheath to encase a conductor is not obvious from the disclosure of *Johnson*. As discussed above, *Johnson* does not disclose a “sheath of material having a positive temperature coefficient,” but rather discloses only a layer 36. Nowhere in *Johnson* is a “sheath of positive temperature coefficient material” disclosed nor is such a sheath suggested. Applicants thus respectfully submit that claim 1 and all of its depending claims are novel and nonobvious over *Johnson*.

Proceeding to the Examiner's argument that claim 1 is obvious in light of the combination of *Heizer* in view of *Johnson*, Applicant respectfully traverses. In paragraph 3 of section 11 of the March 20, 2006, Office Action, the Examiner states that "the claims differ from *Heizer* in calling for at least one of the conductors to be encased in a sheath of material which has a positive temperature coefficient and the heating element electrically contacts the outer surface of the sheath such that the sheath is electrically connected in series between each heating element and the conductor encased by the sheath." Because this rejection is based on the Examiner's assertion that *Johnson* discloses a sheath, Applicant respectfully submits that the rejection must fail.

Johnson does not disclose a sheath of material having a positive temperature coefficient which encases the conductor. In light of the fact that the combined disclosures of *Heizer* and *Johnson* fail to disclose or suggest said sheath of material as claimed, the present invention is not obvious and is, therefore, patentable over the cited prior art. Consequently, Applicant respectfully requests removal of the §103(a) rejection to claim 1 and the claims that depend from it.

We further submit that the use of a sheath to encase a conductor is not obvious from the disclosure of *Johnson et al.* As stated above, *Johnson* does not disclose a sheath of material having a positive temperature coefficient, but rather a layer 36. Nowhere in *Johnson* is a sheath of positive temperature coefficient material encasing a conductor disclosed nor suggested. Since *Johnson* does not suggest nor teach toward the use of a sheath of positive temperature coefficient material to encase a conductor, we submit that claim 1 of the present application is not obvious in light of *Johnson et al.* Indeed, it could even be argued that *Johnson et al* explicitly teaches away from use of a sheath: the skilled person, when referring to the layer 36 of *Johnson et al* in Figure 4, would see that the layer coats only one side of the conductor and does not encase the conductor, and that the layer is clearly not a sheath as understood by the skilled person and as shown by dictionary definitions.

Further bolstering the above arguments in support of the nonobvious nature of the present invention is the realization that *Johnson* was published nearly thirty years ago and yet Applicant is not aware of the existence of any electrical heating cable according to the invention of the present application. It would seem that, if the invention were indeed obvious in light of *Johnson*, it would have been disclosed by now.

For all of the foregoing reasons, Applicant respectfully submits that *Heizer* fails as a primary reference and *Johnson* fails to make up for the lack of teaching by *Heizer*. Accordingly, no *prima facie* case of obviousness can be established, and Applicant respectfully requests withdrawal of the rejections and allowance of claims 1-5 and 7-9 as herein presented.

New Claims:

Dependent claims 7-9 have been added to relate features that the Applicant considers preferred but not essential embodiments of the present invention. These new claims are supported by the application as filed (for example, final paragraph of the specification) and, as such, do not disclose any new material.

Additional Amendments:

Claim 3 has been amended to correct a typographical error.

Conclusion:

Applicant respectfully requests reconsideration, allowance of the pending claims and a timely Notice of Allowance be issued in this case. If the Examiner feels that a telephone conference would expedite the resolution of this case, the Examiner is respectfully requested to contact the undersigned.

In the course of the foregoing discussions, Applicant may have at times referred to claim limitations in shorthand fashion, or may have focused on a particular claim element. This discussion should not be interpreted to mean that the other limitations can be ignored or dismissed. The claims must be viewed as a whole, and each limitation of the claims must be considered when determining the patentability of the claims. Moreover, it should be understood that there may be other distinctions between the claims and the prior art that have yet to be raised, but which may be raised in the future. If any item in the Office Action has been overlooked or is deemed to be incompletely addressed, Applicant respectfully requests the opportunity to respond.

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If any fees are inadvertently omitted or if any additional fees are required or have been overpaid, please appropriately charge or credit those fees to Conley Rose, P.C. Deposit Account Number 03-2769.

Respectfully submitted,



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